

of technical instruction in Cheshire from the commencement. The Technical Instruction Committee has framed a scheme of work which has gradually embraced the whole county, and has provided for the various and special requirements of the different districts, as well as of the county at large. The annual report just received records a year's work of steady progress and development, more especially in regard to relatively advanced instruction, and improved methods of carrying on the classes. During the year ending March 31, 1900, the grants made for purposes of technical instruction amounted to nearly 17,000*l.*, and this sum will be considerably increased during the ensuing year. A number of secondary schools receive grants from the Committee, and it is proposed to increase the payments to such schools. As has been before remarked in these notes, assistance thus given is having a very important effect upon the character of the education in secondary schools; for a condition of the grant is that scientific subjects should be taught, and proper laboratory accommodation provided. We read, for instance, in the present report: "All the schools to which grants for building and equipping laboratories and lecture rooms were made have completed these additions, hence they are in a much better position to give sound instruction in science subjects, and especially in the practical stage, than they were formerly." It is well to bear in mind the beneficial influence which Technical Instruction Committees have thus had upon the curricula of Grammar Schools and others of the old-fashioned type. Among other matters dealt with in the report are experiments on tuberculosis in cattle, for which the Committee made a grant of 250*l.*, and experimental work in agriculture.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, July 16.—M. Maurice Lévy in the chair.—On the uranium radiation, by M. Henri Becquerel. By mixing uranium chloride with barium chloride and precipitating with sulphuric acid, a precipitate of barium sulphate is obtained which is more or less radio-active according to the quantity of barium salt introduced. The radio-activity of the uranium salt remaining undergoes a corresponding diminution. It cannot be settled from these experiments whether uranium salts possess a radio-active power of their own, or whether this property is due to an admixture of an impurity.—Preparation and properties of two borides of silicon, by MM. Henri Moissan and Alfred Stock. By heating together, with special precautions, in a tube of infusible material a mixture of silicon and boron in the electric furnace, two new borides of silicon are produced, SiB_3 and SiB_6 , which can be separated by taking advantage of the facts that SiB_3 is more readily attacked by fused potash, and SiB_6 is more readily destroyed by concentrated nitric acid. Both compounds resist the attack of most reagents and are very hard, scratching ruby with facility.—On the crystallisation of gold, by M. A. Ditte. Gold leaf, heated with a mixture of salt and sodium pyrosulphate or ferrous sulphate, is attacked, and shows traces of crystalline structure, although the temperature has been far below that of the fusion of gold. Platinum gives rise to similar phenomena under the same treatment.—On the solubility of calcium phosphate in the water of soils in presence of carbon dioxide, by M. Th. Schloesing. Neutral $\text{Ca}_3(\text{PO}_4)_2$, obtained free from sodium salts, is practically insoluble in water free from dissolved carbon dioxide. The solubility increases with the amount of dissolved carbonic acid, but if this is accompanied in solution with the corresponding amount of calcium bicarbonate, the solvent action is practically destroyed.—New researches on double fertilisation in angiosperms, by M. L. Guignard. In addition to the cases previously given of double fertilisation in monocotyledons, this has now been observed in *Narcissus poeticus* and *Scilla bifolia*. In dicotyledons, *Anemone nemorosa* has been most completely studied.—The movements of the air on encountering surfaces of different forms, by M. Marey.—Observations of the planets (F.G.) and (F.H.) made with the large equatorial of the Observatory of Bordeaux, by MM. G. Rayet and F. Féraud.—On the formation of coal basins, by M. Grand'Eury. Remarks on the mode of formation of the Loire basin.—M. Lipschitz was nominated a correspondent in the section of Geometry.—On the instability of certain periodic solutions, by M. Levi-Civita.—On the ternary bilinear forms of Hermite, by M. Louis Kollros.—On the law of corresponding states, by M. Daniel Berthelot. After discussing various modifications that have been suggested for bringing Van der Waals'

formula into closer agreement with experiment, the author concludes that the three constants f_c, v_c, T_c are not sufficient to rigorously define the function $f(\beta, v, T)$ of a substance. It is necessary to add two new constants, T_m and v_m , corresponding to the displacements of the zeros of volume and temperature.—On the temperature of maximum density of aqueous solutions of ammonium chloride and lithium bromide and iodide, by M. L. C. de Coppet. The molecular lowering of the temperature of maximum density varied from 7.16 for ammonium chloride to 8.31 for lithium iodide.—On the electrolytic estimation of bismuth, by M. Dmitry Balachowsky. It is possible to get a coherent metallic deposit of bismuth allowing of washing, provided the following conditions are observed: slight acidity of the solution, absence of large quantities of halogen ions, matt electrodes, and low current density.—On the amalgams of sodium and potassium, by MM. Guntz and Féréé. Four amalgams of mercury and sodium were isolated and analysed, Hg_8Na , Hg_6Na , Hg_4Na , Hg_2Na . Similar amalgams, although less clearly defined, were obtained with potassium.—On the reduction of tungstic anhydride by zinc: preparation of pure tungsten, by M. Marcel Delépine. Tungsten of a purity varying from 98.5 to 100 per cent. is obtained by heating zinc with tungstic anhydride or with ammonium tungstate.—Action of reduced nickel upon acetylene, by MM. Paul Sabatier and J. B. Senderens. Acetylene does not react upon reduced nickel in the cold if precautions have been taken to remove all traces of hydrogen from the metal by heating it in a current of nitrogen.—Action of cyanacetic esters with substituted acid radicles upon diazobenzene chloride and tetrazodiphenyl chloride, by M. G. Favrel.—On the limits of grafting in plants, by M. Lucien Daniel.—Action of dry and moist air upon plants, by M. Eberhardt. Compared with dry air, moist air increases the development of the plant, both leaves and stem, the diameter of the latter being reduced. It tends to exaggerate the leaf surface and to diminish the quantity of chlorophyll contained in the leaves.—The volcanic rocks of the Somali Protectorate, by MM. A. de Gennes and A. Bonard.—On a marine formation at the bottom of the Cañon of Regalon, by M. David Martin.—On certain substances specific in pellagra, by MM. V. Babès and E. Manicatic.

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